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Notes on *Phoradendron flavescens*, Nutt. II.

BY J. SCHNECK.

The northern limit of this species, so far as I can ascertain, is near 40° N. lat., except near the Atlantic and Pacific coasts. Gray¹ and Wood² both give its habitat as New Jersey to Illinois. and southward. Wm. M. Canby³ reports it as "frequent" on the peninsula between Delaware and Chesapeake Bay. Lester F. Ward⁴ reports it from the vicinity of Washington, D. C.; John M. Coulter and C. R. Barnes⁵ for the State of Indiana, as "common south." H. N. Patterson⁶ reports it from Wabash and Jackson counties, in Illinois. The most northern station given in the Pacific R. R. Rep., is Benicia, California. It is not mentioned in Bot. King's Exped.; while in Bot. Wheeler's Surv. W. of 100th meridian var. *villosum* is reported from Oregon. Mr. W. M. Canby writes me that he has observed it between Trenton and New Brunswick, N. J. These last two are the only stations of which I have any knowledge north of 40° N. lat. Mt. Carmel, Ill., is near 38° 30' N. lat., with a range of temperature from +104° to -26° Fahr. When we have several consecutive mild winters the mistletoe becomes common, but is again almost exterminated by the return of continuous cold weather, in which the thermometer remains at or below zero for a number of consecutive days. The winters of 1878-79 and 1880-81 were remarkable for the great number of continuous cold days, and came near exterminating the species from our flora. The two following winters were comparatively mild, and as a result the mistletoe was quite abundant last fall. But the unusually severe January we have just passed through has killed most of the bunches.

Does the mistletoe injure the host upon which it grows? My

¹Manual, 1868. ²Class-Book, 1860. ³Bot. Gaz. 6. 271. ⁴Flora of Washington and vicinity. ⁵Cat. of Indiana Plants. ⁶Cat. of Illinois Plants.

observations lead me to answer this question in the affirmative, but in a limited degree. When a thrifty bunch infests a limb, the distal extremity soon ceases to grow and finally dies, unless it be a very large limb; but the tree itself seems to be little, if at all, affected in its growth.

The host on which this parasite is found is peculiar in some localities. During the past eighteen months I have observed it on the trees in this vicinity, as follows: *Acer dasycarpum*, on 6 trees; *A. saccharinum*, 5 trees; *Ulmus fulva*, 1; *Quercus palustris*, 1; *Gleditschia triacanthos*, 28; *Ulmus Americana*, many thousand. In the lower portion of Delaware it is reported as having been found only on *Nyssa multiflora* and *Acer rubrum*⁷; in the vicinity of Washington as "exclusively on *Nyssa multiflora*⁸." The American Elm is not a rare tree in either of these localities, while on the other hand the Black Gum is a common tree in this vicinity, and I have never found a single bunch of mistletoe upon it. I have observed the Elm and Black Gum interlock branches, the former bearing mistletoe and the latter not. In this vicinity it is generally found on trees that grow along streams and on bottom lands, and is rarely seen on the uplands. I made the following notes from the car windows on a visit to Washington, D. C., in February, 1883, starting from Mt. Carmel, Ill., and traveling via Louisville, Ky. "Abundant, but only on the American Elm, until we came to Winslow, Ind. Here for the first time I observed it on the Black Gum. From this on I found it on this species as often as on the Elm. In the blue-grass region of Kentucky I found it common on the Black Walnut and Wild Cherry. In West Virginia it was common on the Red Maple, but had disappeared from the walnut and cherry. East of the Blue Ridge I observed it on a Beech."

Prof. John Collett⁹ gives the following list of trees on which he has observed it in Vanderburg county, Indiana, and the relative frequency of its occurrence on them for 1,000 trees: Black Gum, 500; Red Elm, 420; Water Birch, 20; Black Walnut, 15; Honey Locust, 10; Blue Ash, 10; Soft Maple, 10; Hackberry, 5; Yellow Willow, 5; Shell-bark Hickory, 2; Spanish Oak, 1; White Oak, 1; Wild Cherry, 1. In addition to the above I find records of its growth as follows: Prof. J. M. Coulter¹⁰ reports it as occurring on the Elm and Black Walnut, near Louisville, Ky., and on the "Elm, Walnut, Honey Locust and various other trees," in the vicinity of Hanover, Ind. A. H. Curtiss¹¹ says "it

⁷Bot. Gaz. 6. 271. ⁸Flora of Washington and vicinity. ⁹Ind. Geol. Surv. 1875, p. 241. ¹⁰Bot. Gaz. 2. 116. ¹¹Bot. Gaz. 3. 36.

abounds in Florida, where it may be found on nearly every kind of tree. We know of one plant growing on a low *Prunus Chicasa* only eight feet from the ground." Dr. J. S. Newberry¹² reports var. *pubescens* as being found on *Æsculus Californica*, at Benicia, California. Dr. J. Torrey¹³ states that var. *orbiculatum* was found on *Quercus Emoryi*, in New Mexico, and var. *pubescens* on *Q. agrifolia* in Southern California. In Bot. Mex. Bound. he reports var. *glabriusculum* as being found on *Algarobia glandulosa* along the Rio Grande. Dr. George Engelmann¹⁴ says of var. *macrophyllum* that it was found on soft woods, the Ash, Willow, Poplar, Sycamore and Sapindus, along the Gila and Bonita rivers; and of var. *villosum*, that it was found on hard woods, principally Oaks, in Oregon, California and Arizona, and in the mountains of Arizona on *Q. undulata*. I am informed by perfectly reliable authority that it is common on the Persimmon in the southernmost counties of Illinois. L. F. Ward informs me he has observed it on *Acer rubrum* in the Dismal Swamp.

Notes on the Flora of W. Dakota and E. Montana Adjacent to the Northern Pacific Railroad.* I.

BY JOHN B. LEIBERG.

While in the service of the Northern Pacific Railroad Company during the past year in the interest of tree culture, I had abundant opportunity to examine the interesting and, to some extent, peculiar flora of Western Dakota, and to a limited degree the eastern portion also, and the eastern part of Montana as far west as the Yellowstone river at Glendive, and to make large and full collections of the same. Copious and interesting notes were made respecting the botanical features of the region, and a few of the more prominent are here presented.

The climate of Eastern Dakota, in both rain-fall and temperature, does not appear to present any great variation from that of the prairie region of Western Minnesota, except, perhaps, a somewhat longer winter. The climate of the western portion is very different. The summer is very dry; showers are of rare occurrence, and the temperature varies excessively. Thus in the month of July the mercury rose to 115° Fahrenheit, and fell to 32°.

¹²Pacif. R. R. Rep. ¹³Pacif. R. R. Rep. ¹⁴Bot. Wheeler's Expd. 252.

*Read before the Minnesota Academy of Natural Sciences, March 4, 1884.